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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,255	10/03/2003	Hare Tazawa	Q77801	9092

23373 7590 03/30/2006
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EXAMINER

LEE, JOHN D

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/677,255

Applicant(s)

TAZAWA ET AL.

Examiner

John D. Lee

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23,27-38 and 46-48 is/are allowed.
- 6) ☒ Claim(s) 1-22,24-26 and 39-45 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application (PTO-152) |
| 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1003.0605</u> | 6) ☐ Other: ____ |

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. §§ 119

(a)-(d) or (f). All of the certified copies of the priority documents have been received.

The forty-three (43) sheets of drawings filed in this application on October 3, 2003, are acceptable.

The disclosure has not been studied to the extent necessary to discover all possible minor errors therein. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims 6 and 7 are objected to because of the following minor informalities. Each of these two claims includes the term "the translucent clad", for which there is no antecedent support. It is therefore believed that these two claims should each depend from claim 5 (where the term is first recited) rather than from claim 1. This assumption will be made for further examination purposes. Appropriate correction is, however, required.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-10 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U.S. Patent 5,432,876 to Appeldorn et al. Appeldorn et al discloses a linear light emitter comprising a translucent rod-shaped body which has a light incident portion at one end thereof and which has, on a peripheral side surface running along an axial direction, a series of light reflecting grooves reflecting incident light from the light incident portion. An angle $\Theta(^{\circ})$ formed by the light reflecting grooves is most preferably $30 \leq \Theta \leq 60$ (see

column 3, line 61, of Appeldorn et al). The angle $\Theta(^{\circ})$ can gradually increase as a distance from the light incident portion increases (see column 4, lines 38-42, and column 9, lines 28-33, of Appeldorn et al). The light reflecting grooves are illustrated as being V-shaped.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 11-22, 24-26, and 39-45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,432,876 to Appeldorn et al. As set forth above, Appeldorn et al discloses a linear light emitter comprising a translucent rod-shaped body which has a light incident portion at one end thereof and which has, on a peripheral side surface running along an axial direction, a series of light reflecting grooves (i.e. a light reflecting layer) reflecting incident light from the light incident portion. Appeldorn et al does not specifically disclose the relationship set forth in applicant's claim 1, but the figures of drawing certainly imply such a relationship. Notice that the claimed relationship puts the ratio of the cross-sectional surface area of the light reflecting layer (groove surface area) to the length of the outer periphery of the rod-shaped body to be between 0.01 and 0.2. As indicated, these values are not set forth in Appeldorn et al, but clearly appear to be present from extrapolation of the drawings thereof. Such numerical limitations would thus have been obvious in the reference to a person of ordinary skill in the art. It can easily be seen that the line width of the Appeldorn et al light reflecting layer gradually increases as a distance from the light incident portion increases. As for

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applicant's claim 3 limitation, the intensity of reflected light in Appeldorn et al can be controlled by many factors, such as the intensity of the incident radiation. The requirement that the intensity of reflected light attain a specific numerical value would thus have been an obvious matter for the person of ordinary skill in the art. The configuration of the cross-section of the Appeldorn et al linear light emitter is circular. The optical fiber waveguide from which the Appeldorn et al device is formed includes both a higher refractive index core and a lower refractive index clad. Core and clad can both be made of optical quality resin materials (column 8, lines 49-57, of Appeldorn et al). Regarding applicant's claims 11-15, Appeldorn et al does not disclose that the light reflecting grooves are formed with groove walls at both ends, or that the groove walls and bottom have the prescribed shape. Figure 4a of Appeldorn et al shows the best view of the groove shape. Although the both ends of the groove appear to be represented by a point convergence of the side walls in this figure, it is believed obvious that the disclosure of the reference does not require this to be an exclusive shape. Other groove shapes could also be used. To a person of ordinary skill in the art, then, groove shapes like those of applicant's claims 11-15 would have been obvious in the Appeldorn et al device. Regarding applicant's claims 16-22, Appeldorn et al does not discuss specific numerical values for the surface roughness of the light reflecting surface at the light reflecting grooves. Appeldorn et al does, however, specify that such surface is to be very, very smooth (i.e. of high optical quality) – see the portion of the reference from column 3, line 57, to column 4, line 5. Making the surface roughness (Ra) of the light reflecting surface at the light reflecting grooves in Appeldorn et al be 0.5 μm or less (or even 0.3 μm or less) would therefore have been obvious to the person of ordinary skill in

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the art. It would further be quite obvious that part of the manner in which this optical surface quality is achieved is through polishing. Regarding applicant's claims 44, and 45, note that a particular prescribed use of a device has no bearing upon the patentability of the device itself, so that these claims are obvious for the same reasons as claim 1.

Claims 23, 27-38, and 46-48 are allowable over the prior art of record. U.S. Patent 5,432,876 to Appeldorn et al, the closest prior art of record, does not disclose or reasonably suggest (1) the formation of a light reflecting film at the light reflecting groove(s) and at a land portion other than the light reflecting groove, (2) coating a material on the light reflecting surface at the light reflecting groove(s), wherein the material has a refractive index higher than that of the translucent rod-shaped body, or (3) methods for manufacturing the linear light emitter involving transfer films, injection molding, and injection charging.

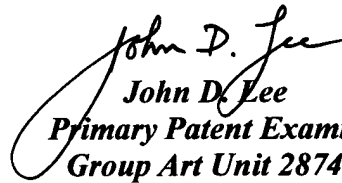
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other relevant linear light emitters comprising rod-like translucent bodies and lateral light emitting portions can be seen in U.S. Patents 5,659,643 to Appeldorn et al, 6,154,595 to Yokogawa et al, and 6,278,827 to Sugiyama et al.

All of the prior art documents cited by applicant in the Information Disclosure Statements filed on October 3, 2003, and June 6, 2005, have been considered and made of record. Note the attached initialed copy of forms PTO-1449.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under

37 CFR § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. §§ 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (571) 272-2351. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562, to the technical support staff supervisor (Team 8) at telephone number (571) 272-1564, or to the Technology Center 2800 Customer Service Office at telephone number (571) 272-1626.


John D. Lee
Primary Patent Examiner
Group Art Unit 2874